



# Comparison

**LT2 / LT3**



Sensors and systems for combustion technology

[www.lamtec.de](http://www.lamtec.de)

# Comparison LT2 / LT3

1 Electronics / Lambda Transmitter		
	<b>Application</b>	
	O <sub>2</sub> measurement	
	CO <sub>e</sub> detection	
	O <sub>2</sub> Control	
	CO/O <sub>2</sub> Control	
	<b>Housing</b>	
	Wall mounting	
	Protection class	
	Dimension	
	Weight	
	Display and operation	
	<b>Characteristics</b>	
	Power supply	
	Power consumption	
	Display	
	<b>Analogue output</b>	
	Factory settings	Description
		For O <sub>2</sub>
		For CO <sub>e</sub>
		Others
	<b>Analogue input</b>	
	Factory settings	Description

LT2 / LS2 or LS2-HT	LT3 / LS2 or LS2-HT	LT3 / KS1D or KS1D-HT	LT3-F / KS1D OR KS1D-HT (ONLY TOGETHER WITH BMS)
YES	YES	YES	YES
NO	NO	YES	YES
YES	YES	YES	YES
NO	NO	NO	YES (SIL2)

Steel sheet, powder coated, RAL 7035	Steel sheet, powder coated, RAL 7035	Steel sheet, powder coated, RAL 7035	Steel sheet, powder coated, RAL 7035
IP65	IP54 / IP65 on request	IP54 / IP65 on request	IP54 / IP65 on request
400 x 300 x 150 mm <sup>3</sup>	300 x 300 x 120 mm <sup>3</sup>	300 x 300 x 120 mm <sup>3</sup>	300 x 300 x 120 mm <sup>3</sup>
10 kg	6 kg	6 kg	6 kg
Option : User Interface; LT Remote Display Software; (OEM version without operating unit)	User Interface (Options: LSB Remote Software)	User Interface (Options: LSB Remote Software)	User Interface (Options: LSB Remote Software)

230 VAC and 115 VAC +10 % /-15 % 48 Hz ... 62 Hz	120 ... 230 VAC -30 /+10 % 50 ... 60 Hz	120 ... 230 VAC -30 /+10 % 50 ... 60 Hz	120 ... 230 VAC -30 /+10 % 50 ... 60 Hz
50 VA (short term 150 VA)	30 VA (max. 69 W)	30 VA (max. 69 W)	30 VA (max. 69 W)
LCD graphic display 1 Standard: Optional	UI300 with LCD graphic display	UI300 with LCD graphic display	UI300 with LCD graphic display

Up to 4 voltage outputs (0/4 ... 20 mA or 0 ... 10 V)	Optional LSB module with 4 outputs (0/4 ... 20 mA or 0 ... 10 V)	Optional LSB module with 4 outputs (0/4 ... 20 mA or 0 ... 10 V)	Optional LSB module with 4 outputs (0/4 ... 20 mA or 0 ... 10 V)
0 ... 10 Vol.% O <sub>2</sub> (0/4 ... 20 mA or 0 ... 10 V)	0 ... 10 Vol.% O <sub>2</sub> (0/4 ... 20 mA or 0 ... 10 V)	0 ... 10 Vol.% O <sub>2</sub> (0/4 ... 20 mA or 0 ... 10 V)	0 ... 10 Vol.% O <sub>2</sub> (0/4 ... 20 mA or 0 ... 10 V)
		0 ... 1.000 ppm CO <sub>e</sub> (0/4 ... 20 mA or 0 ... 10 V)	0 ... 1.000 ppm CO <sub>e</sub> (0/4 ... 20 mA or 0 ... 10 V)
Configurable	Configurable	Configurable	Configurable

Up to 4 inputs			
Potentiometer 1 ... 5 kΩ			
0/4 ... 20 mA			
0/4 ... 20 mA with 24 VDC supply			
Temperature input for Pt100			

# Comparison LT2 / LT3

	Digital output	
	Factory settings	Description
	Digital input	
	Factory settings	Description

1 Electronics / Lambda Transmitter		
	HART communication	
	Factory settings	Description
		For O <sub>2</sub> and HART
		For CO <sub>e</sub>
	Temperature / Efficiency / Output	
	Factory settings	Description
		IN1: for flue gas temperature
		IN2: for inlet air temperature
		OUT1: for flue gas temperature
		OUT2: for efficiency
	Conformity	
	EMC Directive	
	EMC Directive	
RoHS Directive		
Gas Appliances Regulation		

1 Standard configurable relays + 6 further optional on relays card (1 floating changeover contact)	1 Optional digital output LSB module with 4 floating contacts (4 relays)	1 Optional digital output LSB module with 4 floating contacts (4 relays)	1 Optional digital output LSB module with 4 floating contacts (4 relays)
8 Inputs - configurable	1 Optional digital input LSB module with 4 digital inputs - configurable	1 Optional digital input LSB module with 4 digital inputs - configurable	1 Optional digital input LSB module with 4 digital inputs - configurable

LT2 / LS2 or LS2-HT	LT3 / LS2 or LS2-HT	LT3 / KS1D or KS1D-HT	LT3-F / KS1D OR KS1D-HT (ONLY TOGETHER WITH BMS)
	1 Optional HART LSB module with 2 analogue outputs (0/4 ... 20 mA)	1 Optional HART LSB module with 2 analogue outputs (0/4 ... 20 mA)	1 Optional HART LSB module with 2 analogue outputs (0/4 ... 20 mA)
	0 ... 10 Vol.% O <sub>2</sub> (4 ... 20 mA)	0 ... 10 Vol.% O <sub>2</sub> (4 ... 20 mA)	0 ... 10 Vol.% O <sub>2</sub> (4 ... 20 mA)

Optional measurement of flue gas temperature and efficiency calculation	Optional efficiency LSB Module with 2 Pt100 inputs and 2 analogue outputs (0/4 ... 20 mA)	Optional efficiency LSB Module with 2 Pt100 inputs and 2 analogue outputs (0/4 ... 20 mA)	Optional efficiency LSB Module with 2 Pt100 inputs and 2 analogue outputs (0/4 ... 20 mA)
Pt100 0 ... 320 °C	Temperature input for Pt100 (0 ... 400 °C)	Temperature input for Pt100 (0 ... 400 °C)	Temperature input for Pt100 (0 ... 400 °C)
Pt100 0 ... 320 °C	Temperature input for Pt100 (0 ... 400 °C)	Temperature input for Pt100 (0 ... 400 °C)	Temperature input for Pt100 (0 ... 400 °C)
0/4 ... 20 mA or 0 ... 10 V = 0 ... 320 °C	0/4 ... 20 mA or 0 ... 10 V = 0 ... 400 °C	0/4 ... 20 mA or 0 ... 10 V = 0 ... 400 °C	0/4 ... 20mA or 0 ... 10 V = 0 ... 400 °C
0/4 ... 20 mA or 0 ... 10 V = 80 ... 100 %	0/4 ... 20 mA or 0 ... 10 V = 80 ... 100 %	0/4 ... 20 mA or 0 ... 10 V = 80 ... 100 %	0/4 ... 20 mA or 0 ... 10 V = 80 ... 100 %

2014/30/EU	2014/30/EU	2014/30/EU	2014/30/EU
2014/35/EU	2014/35/EU	2014/35/EU	2014/35/EU
2011/65/EU	2011/65/EU	2011/65/EU	2011/65/EU
			2016/428EU

# Comparison LT2 / LT3

1 Probe - standard type	<b>Characteristics Standard probes</b>	
	Measuring gas	
	Measurement range	O <sub>2</sub> CO <sub>e</sub>
	Measurement accuracy	O <sub>2</sub>
		CO <sub>e</sub>
	Response time (t <sub>60</sub> )	O <sub>2</sub>
		CO <sub>e</sub>
	Electrical connection of the probe	
	<b>Environmental conditions for standard probe</b>	
	Maximum temperature	Of exhaust gas
		At probe head
	Gas velocity	
	Fuels and design life	Natural gas
		Heavy fuel oil (HFO)
	Protection class	
	<b>Certificates</b>	
	EC type examination certificate	
	SIL2 Confirmation	

LT2 / LS2	LT3 / LS2	LT3 / KS1D	LT3-F / KS1D (ONLY TOGETHER WITH BMS)
O <sub>2</sub>	O <sub>2</sub>	O <sub>2</sub> / CO <sub>e</sub>	O <sub>2</sub> / CO <sub>e</sub>
0 - 21 Vol.%	0 - 21 Vol.%	0 - 21 Vol.%	0 - 21 Vol.%
		0 - 1.000 ppm	0 - 1.000 ppm
±10 % of the measured value, not better than ± 0,3 Vol%	±5 % of the measured value, not better than ± 0,3 Vol%	±5 % of the measured value, not better than ± 0,3 Vol%	±5 % of the measured value, not better than ± 0,3 Vol%
		±25 % of the measured value, not better than ± 20 ppm after adjustment	±25 % of the measured value, not better than ± 20 ppm after adjustment
≤ 3 s	< 3 s	< 3 s	< 3 s
		< 3 s (electronically filtered to < 9 s at the factory)	< 3 s (electronically filtered to < 9 s at the factory)
Plug	Plug	Plug	Plug

≤ 300 °C	≤ 300 °C	≤ 300 °C	≤ 300 °C
≤ 150 °C	≤ 150 °C	≤ 150 °C	≤ 150 °C
< 6 m/s	< 6 m/s	< 6 m/s	< 6 m/s
> 3 Years	> 3 Years	> 3 Years	> 3 Years
> 3 Years	> 3 Years	> 3 Years	> 3 Years
IP42	IP42	IP42	IP42

			DIN EN 16340:2014-10
			DIN EN 13611:2011-12
			DIN EN 60730-1:2010-10
			DIN EN 61508:2011-02 Teil 1-7
			DIN EN 16340:2014-10

# Comparison LT2 / LT3

Characteristics of HT probes	
Measuring gas	
Measurement range	O <sub>2</sub> CO <sub>e</sub>
Measurement accuracy	O <sub>2</sub> CO <sub>e</sub>
Response time (t <sub>60</sub> )	O <sub>2</sub> CO <sub>e</sub>
Electrical connection of probe	
Max. Sample gas temperature HT probe	
Maximum Temperatur of exhaust gas	At probe head
	At connecting cable
Gas velocity	
Protection class	Natural gas
	Light oil
	Heavy fuel oil (HFO)
	Lignite and coal
	Biomass



LT2 / LS2 or LS2-HT	LT3 / LS2-HT	LT3 / KS1D-HT	LT3-F / KS1D-HT (ONLY TOGETHER WITH BMS)
O <sub>2</sub>	O <sub>2</sub>	O <sub>2</sub> / CO <sub>e</sub>	O <sub>2</sub> / CO <sub>e</sub>
0-21 Vol.%	0-21 Vol.%	0-21 Vol.%	0-21 Vol.%
		0-1.000 ppm / 0-10.000 ppm	0-1.000 ppm
±5 % from the measured value, not better than ± 0,3 Vol%	±5 % from the measured value, not better than ± 0,3 Vol%	±5% from the measured value, not better than ± 0,3 Vol%	±5% from the measured value, not better than ± 0,3 Vol%
		±25% from the measured value, not better than ± 20 ppm after calibration	±25% from the measured value, not better than ± 20 ppm after calibration
< 3 s	< 3 s	< 3 s	< 3 s
		< 3 s (electronically filtered to < 9 s at the factory)	< 3 s (electronically filtered to < 9 s at the factory)
Plug	Plug	Plug	Plug
≤ 1200 °C (Kanthal)	≤ 1200 °C (Kanthal)	≤ 1200 °C (Kanthal)	≤ 1200 °C (Kanthal)
≤ 950 °C (Inconell)	≤ 950 °C (Inconell)	≤ 950 °C (Inconell)	≤ 950 °C (Inconell)
≤ 750 °C (Standard)	≤ 750 °C (Standard)	≤ 750 °C (Standard)	≤ 750 °C (Standard)
≤ 450 °C	≤ 450 °C	≤ 450 °C	≤ 300 °C
≤ 100 °C	≤ 100 °C	≤ 100 °C	≤ 100 °C
1 ... 16 m/s	1 ... 16 m/s	1 ... 16 m/s	1 ... 16 m/s
≥ 3 Years	≥ 3 Years	≥ 3 Years	≥ 3 Years
≥ 3 Years	≥ 3 Years	≥ 3 Years	≥ 3 Years
< 2 Years	< 2 Years	< 2 Years	< 2 Years
< 2 Years	< 2 Years	< 2 Years	< 2 Years
< 2 Years	< 2 Years	< 2 Years	< 2 Years
IP65	IP65	IP65	IP65

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